



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/660,361	09/11/2003	Hooman Honary	P16342	5503

7590 08/07/2006

Buckley, Maschoff, Talwalkar & Allison LLC  
Attorney for Intel Corporation  
Five Elm Street  
New Canaan, CT 06840

EXAMINER
----------

RIZK, SAMIR WADIE

ART UNIT	PAPER NUMBER
----------	--------------

2133

DATE MAILED: 08/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/660,361

Applicant(s)

HONARY ET AL.

Examiner

Sam Rizk

Art Unit

2133

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 July 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTIONS**

- Claims 1-23 have been submitted for examination
- Claims 1-23 have been rejected

**Response to Arguments**

1. Applicant's arguments, see pages 2-6, filed on 7/17/2006, with respect to the rejection(s) of claim 1 under 35 USC § 102 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Box et al. US publication 2004/0243908 (Hereinafter Box).

**Claim Rejections - 35 USC § 102**

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-23 are rejected under 35 U.S.C. 102(e) as being anticipated by Box.
3. In regard to claim 1, Box teaches:
  - (original) An apparatus comprising:
  - an instruction decoder; at least one control register coupled to the instruction decoder; and

(Note: Fig. 1a, reference sign (14) "master Control" in Box)

- an add-compare-select (ACS) engine coupled to the at least one control register;

(Note: Fig. 1a, reference sign (16) in Box)

The Examiner notes that the butterfly operation disclosed in Box perform ACS operation.

- Wherein the instruction decoder is operative to control the ACS engine to perform Viterbi decoding in response to the instruction decoder receiving a first instruction, and the instruction decoder is further operative to control the ACS engine to perform turbo decoding in response to the instruction decoder receiving a second instruction.

(Note: Section [0054] in Box)

4. In regard to claim 2, Box teaches:

- The apparatus of claim 1, wherein the ACS engine includes'
- a plurality of ACS units to perform ACS operations;

(Note: Fig. 1a reference signs (16,18,24) in Box)

- a branch metric register coupled to the ACS units to supply branch metric data to the ACS units; and

(Note: Fig. 3 and section [0044] in Box)

- a plurality of accumulators coupled to the ACS units to store results of the ACS operations performed by the ACS units.

(Note: Fig. 6a in Box)

5. In regard to claim 3, Box teaches:

- (original) The apparatus of claim 2, further comprising: a memory coupled to the ACS units, to the branch metric register, and to the accumulators.

(Note: Fig. 1a, reference signs (20 & 22) in Box)

6. In regard to claim 4, Box teaches:

- (currently amended) The apparatus of claim 3, wherein in a first mode of apparatus operands are supplied to the ACS units from the accumulators and in a second mode of operating the apparatus operands are supplied to the ACS units from the memory.

(Note: Fig. 3 and section [0045] in Box.

7. In regard to claim 5, Box teaches:

- (original) The apparatus of claim 2, wherein the plurality of accumulators includes four accumulators.

(Note: Fig. 2, reference signs (16 & 18 in Box)

8. In regard to claim 6, Box teaches:

- (original) The apparatus of claim 5, wherein each of the accumulators includes eight units, each unit being capable of storing 48 bits.

(Note; Fig. 2, reference sign (16) inputs  $N1+L1+B2$  ( $16 \times 3 = 48$  bit in Box)

9. In regard to claim 7, Box teaches:

- (original) The apparatus of claim 6, wherein the 48 bits stored in each accumulator unit include 16 guard bits.

(Note; Fig. 2, reference sign (16) inputs  $N1+L1+B2$  ( $16 \times 3 = 48$  bit in Box)

10. In regard to claim 8, Box teaches:

- (original) The apparatus of claim 2, wherein each of the ACS units is capable of performing butterfly operations.

(Note: Fig. 1a, reference sign (16) in Box)

11. In regard to claim 9, Box teaches:

- (original) The apparatus of claim 8, wherein;
- a final add of a butterfly operation performed by one of the ACS units is a two-operand add if the ACS engine is performing Viterbi decoding; and
- the final add of the butterfly operation is a three-operand add if
  - (a) the ACS engine is performing turbo decoding and
  - (b) a certain intermediate result is obtained during the final add.

(Note: Figures (6a & 6b) in Box)

12. In regard to claim 10, Box teaches:

- (original) The apparatus of claim 9, wherein an operand for the three-operand add is looked up in a look up table if (a) the ACS engine is performing turbo decoding and (b) the certain intermediate result is obtained during the final add.

(Note: Fig. 1a, reference sign (20) in Box)

13. In regard to claim 11, Box teaches:

- (Original) A system comprising:
- a forward error correction decoder; and

(Note: section [0003] in Box0

- a speaker coupled to the forward error correction decoder to audibly reproduce corrected data output from the forward error correction decoder;
- wherein the forward error correction decoder includes;
  - an instruction decoder
  - at least one control register coupled to the instruction decoder; and

(Note: Fig. 1a, reference sign (14) "master Control" in Box)

- an add-compare-select (ACS) engine coupled to the at least one control register;

(Note: Fig. 1a, reference sign (16) in Box)

The Examiner notes that the butterfly operation disclosed in Box perform ACS operation.

- wherein the instruction decoder is operative to control the ACS engine to perform Viterbi decoding in response to the instruction decoder receiving a first instruction, and the instruction decoder is further operative to control the ACS engine to perform turbo decoding in response to the instruction decoder receiving a second instruction.

(Note: Section [0054] in Box)

14. Claim 12 is rejected for the same reasons as per claim 2.
15. Claim 13 is rejected for the same reasons as per claim 3.

Art Unit: 2133

16. Claim 14 is rejected for the same reasons as per claim 4.
16. Claim 15 is rejected for the same reasons as per claim 5.
17. Claim 16 is rejected for the same reasons as per claim 6.
18. Claim 17 is rejected for the same reasons as per claim 7.
19. Claim 18 is rejected for the same reasons as per claim 8.
20. Claim 19 is rejected for the same reasons as per claim 9.
21. Claim 20 is rejected for the same reasons as per claim 10.
22. Claim 21 is rejected for the same reasons as per claim 11.
23. In regard to claim 21, Box teaches:
  - (original) The method of claim 21, wherein the first instruction is provided to the instruction decoder if voice data is to be decoded by the forward error correction decoder.

(Note: section [0003] in Box)
24. In regard to claim 23, Box teaches;
  - (original) The method of claim 21, wherein the second instruction is provided to the instruction decoder if image data is to be decoded by the forward error correction decoder.

(Note: section [0003] in Box)

### ***Conclusion***

25. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.



Art Unit: 2133

- Berens et al. US publication no. 2005/0278603 teaches combined turbo-code/convolutional code decoder, in particular for mobile radio systems.
- Bitterlich et al. US publication no. 2002/0119803 teaches channel codec processor configurable for multiple wireless communications standards.
- Chun et al. US publication no. 2005/0034051 teaches reconfigurable Viterbi/Turbo decoder.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sam Rizk whose telephone number is (571) 272-8191. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Art Unit: 2133

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronics Business Center (EBC) at 866-217-9197 (toll-free)

Sam Rizk, MSEE, ABD

Examiner

ART UNIT 2133

*[Handwritten signature]*  
8/2/06

*[Handwritten signature]*  
ALBERT DECADY  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2100